

CLAIMS

1. A method of opening and closing an opening in a structure with a bi-fold door having first and second panels, means movably mounting the first panel on the structure, hinges connecting the first panel to the second panel to allow the first and second panels to be moved from generally vertically aligned positions closing the opening to side-by-side folded positions opening the opening and door lift devices having rotatable members operable to selectively open and close the bi-fold door comprising: rotating the rotatable members with a power unit at a constant rate of speed, connecting the rotatable members to one panel, moving the first and second panels at an increasing rate of speed from a closed position to an open position during rotation of the rotatable members at a constant rate of speed in one direction, and moving the first and second panels at a decreasing rate of speed from an open position to a closed position during rotation of the rotatable members at a constant rate of speed in a direction opposite the one direction.

2. The method of Claim 1 including: operating a reversible electric motor at a constant rate of speed to rotate the rotatable members at a constant rate of speed.

3. The method of Claim 1 wherein: the first and second panels are moved at an increasing rate of speed during the entire movement of the first and second panels from the closed to the open positions thereof.

4. The method of Claim 1 wherein: the first and second panels are moved at a decreasing rate of speed during the entire movement of the first and second panels from the open to the closed positions thereof.

5. The method of Claim 1 wherein: the first and second panels are moved at an increasing rate of speed during the entire movement of the first and second panels from the closed to the open positions thereof, and the first and second panels are moved at a decreasing rate of

speed during the entire movement of the first and second panels from the open to the closed positions thereof.

6. The method of Claim 1 wherein: the rotatable members are connected to one panel with elongated flexible webs which wind in overlapping relation around the rotatable members.

7. A method of opening and closing an opening in a structure with a door, means movably mounting the door on the structure for movement between a down closed position to an up open position, and a door lift device having a rotatable member operable to selectively move the door between the closed and open positions thereof comprising: rotating the rotatable member at a constant rate of speed, moving the door at an increasing rate of speed from the closed position to the open position during rotation of the rotatable member at a constant rate of speed in one direction, and moving the door at a decreasing rate of speed from the open position to the closed position during rotation of the rotatable member at a constant rate of speed in a direction opposite the one direction.

8. The method of Claim 7 including: operating a reversible electric motor at a constant rate of speed to rotate the rotatable member at a constant rate of speed.

9. The method of Claim 7 wherein: the door is moved at an increasing rate of speed during the entire movement of the door from the closed to the open positions thereof.

10. The method of Claim 7 wherein: the door is moved at a decreasing rate of speed during the entire movement of the door from the open to the closed positions thereof.

11. The method of Claim 7 wherein: the door is moved at an increasing rate of speed during the entire movement of the door from the closed to the open positions thereof, and the door is moved at a decreasing rate of speed during the entire movement of the door from the open to the closed positions thereof.

12. The method of Claim 7 wherein: the rotatable member is connected to one panel with an elongated flexible web which winds in overlapping relation around the rotatable member.

13. A bi-fold door for an opening in a structure and apparatus for moving the bi-fold door between open and closed positions relative to the opening said door having a first panel, means for movably mounting the first panel on the structure, a second panel, means pivotally connecting the first panel to the second panel to allow the first and second panels to be moved from aligned positions closing the opening to side-by-side folded positions opening the opening, said door lift devices being operable to selectively open and close the bi-fold door, characterized by: a reversible electric motor connected to the door lift devices operable at a constant rate of speed for operating the door lift devices, said door lift devices having an elongated flat and flexible web having a first end and a second end, rotatable means attached to the first end of the web, said rotatable means including a shaft connected to the electric motor and a cylindrical means mounted on the shaft, and means connecting the first end of the web to the rotatable means whereby upon constant speed operation of the electric motor the shaft is rotated in one direction and the web winds in overlapping relation around the cylindrical means thereby moving the door at an increasing rate of speed from a closed position to an open position and upon reverse operation of the electric motor the shaft is rotated in a direction opposite the one direction and the web unwinds from the cylindrical means whereby the door moves at a decreasing rate of speed from the open position to the closed position, means mounting the rotatable means on one of the panels, and anchor means mounted on the other panel connecting to the second end of the web.

14. The apparatus of Claim 13 wherein: the web is a flexible and flat plastic member.

15. The apparatus of Claim 13 wherein: the means connecting the first end of the web to the rotatable means comprises plates secured to the shaft, and a rigid member extended between and mounted on said plates, said first end of the web having means located between said plates

accommodating the rigid member whereby when said shaft is rotated by the power means the web winds on itself around the cylindrical means to open the bi-fold door.

16. The apparatus of Claim 15 including: a cylindrical shield surrounding the plates, first end of the web, and the web wound on the shaft, said shield having a slot, and said web extended through said slot.

17. The apparatus of Claim 13 wherein: the anchor means includes means to take up slack of the web to allow the door to move to the full open and closed positions.